



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/506,367	04/05/2005	Jurgen Hemberger	14503-011US1	1076
26191 7590 09/24/2007 FISH & RICHARDSON P.C. PO BOX 1022 MINNEAPOLIS, MN 55440-1022			EXAMINER DESAI, ANAND U	
			ART UNIT 1656	PAPER NUMBER
			MAIL DATE 09/24/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/506,367

Applicant(s)

HEMBERGER ET AL.

Examiner

Anand U. Desai, Ph.D.

Art Unit

1656

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37 and 43-73 is/are pending in the application.
- 4a) Of the above claim(s) 56-73 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37, 43-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to Amendment filed on July 6, 2007. Claims 38-42, and 74-79 have been cancelled. Claims 56-73 have been withdrawn previously.
2. Claims 37, and 43-55 are currently pending and are under examination.

Information Disclosure Statement

3. The information disclosure statement filed June 25, 2007 fails to comply with 37 CFR 1.97(c) because it lacks a statement as specified in 37 CFR 1.97(e). It has been placed in the application file, but the information referred to therein has not been considered.

Withdrawal of Rejections

4. The rejection of claims 37, 44, 45, 48-53, and 55 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, and 6-11 of U.S. Patent No. 6,083,909 (10/3/2005 IDS document AB) is withdrawn based on the amendment to the claims to recite an amine bond via a Schiff's base.
5. The rejection of claims 37, and 43-55 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 86, and 87 of copending Application No. 10/472,002 (US 2005/0063943 A1) is withdrawn based on the amendment to the claims to recite an amine bond via a Schiff's base.
6. The rejection of claims 37, 43, and 50-55 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 5-8, 21, and 22 of copending Application No. 10/567,265 is withdrawn.

Art Unit: 1656

7. The rejection of claims 37, and 43-55 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 5, 8, 12, 15-18, 44, 45, 47-53, 55, 56, 58-61 and 81-85 of copending Application No. 11/078,582 (US 2006/0019877 A1) is withdrawn.
8. The rejection of claims 37, and 43-55 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 34-50 of copending Application No. 11/078,098 (US 2005/0238723 A1) is withdrawn.
9. The rejection of claims 37, and 43-55 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 25-36, and 38-59 of copending Application No. 11/518,352 is withdrawn.
10. The rejection of claims 37, and 43-55 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 13-22, and 24-31 of copending Application No. 11/530,264 is withdrawn.
11. The rejection of claims 37, and 43-55 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn.
12. The rejection of claims 37, 44, 45, 48-53, and 55 under 35 U.S.C. 102(e) as being anticipated by Sommermeyer et al. (U.S. Patent 6,083,909; 10/3/2005 IDS document AB) is withdrawn based on the amendment to the claims.
13. The rejection of claims 37, 44-48, 50-53, and 55 under 35 U.S.C. 102(b) as being anticipated by Cerny (U.S. Patent 4,900,780) is withdrawn based on the amendment to the claims.

Art Unit: 1656

14. The rejection of claims 37, 50-53, and 55 under 35 U.S.C. 102(b) as being anticipated by Beez et al. (Translated version of German Patent Application 26 16 086; 1/3/2007 IDS document 46) is withdrawn based on the amendment to the claims.

Maintenance of Rejections

Double Patenting

15. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal

disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR

3.73(b).

16. Claims 37, 43-53, and 55 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 37-50, 54, 56, and 74-78 of copending Application No. 10/506,366 (US 2006/0217293 A1).

The rejection was explained in the office action mailed March 6, 2007.

Claim Rejections - 35 USC § 112, First Paragraph, Written Description

17. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

18. Claims 37, and 43-55 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The rejection was explained in the office action mailed March 6, 2007.

Response to Remarks

19. Applicants' state the claims have been amended to recite the hydroxyalkyl starch (HAS) and the protein are covalently bonded by a coupling reaction between the terminal aldehyde group of the HAS molecule and a primary amino group of the protein to form a Schiff's base. Applicants' state examples 11-15 disclose the inventors coupled high and low molecular weight HES to albumin, asparaginase, interleukin-2, and insulin. Applicants' state a person of skill in the art reading these examples would understand that the coupling in each case occurred via a Schiff's base, since in each case a reducing agent (sodium cyanoborohydride, or sodium borohydride) was added to the reaction mixture.

Applicant's arguments filed July 6, 2007 have been fully considered but they are not persuasive. The claims are rejected under 35 U.S.C. 112, 1st paragraph, Written Description, because the specification does not disclose a representative number of hydroxyalkyl starch polysaccharides that can be conjugated to any protein, which would lead one skilled in the art to conclude that applicant was in possession of the claimed invention. The claims are also rejected

Art Unit: 1656

under 35 U.S.C. 112, 1st paragraph, Written Description, because the specification does not disclose functional derivatives or fragments of the protein. In addition, the examples do not describe selective amine bond formation with primary amines, but the formation of amine bonds via Schiff's base using reducing agents, including amine reactive side chains of lysine residues for example.

Claim Rejections - 35 USC § 112, 1st paragraph, enablement rejection

20. Claims 37, and 43-55 are rejected under 35 U.S.C. 112, first paragraph, because the specification, does not reasonably provide enablement for any hydroxyalkyl starch protein conjugate.

The rejection was explained in the office action mailed March 6, 2007.

Response to Remark

21. Applicants' state the amended claims are fully enabled. This is particularly true given that the level of skill in the art is high; the amended claims recite the functional group of the HAS molecule and the functional group of the protein involved in the formation; the claims recite the HAS-protein conjugation proceeds via a formation of a Schiff's base in the covalent bonding. Applicants' state the specification provides numerous examples of HAS-protein coupling reactions. Applicants' state the specification describes downstream applications of the recited conjugates. Applicants' state the specification provides more than adequate guidance for using the presently recited conjugates.

Applicant's arguments filed July 6, 2007 have been fully considered but they are not persuasive. The claims are rejected because of undue experimentation to make and use the

Art Unit: 1656

claimed hydroxyalkyl starch protein conjugate. The undue experimentation arises due to the unpredictability based on the different unknown structures of materials, such as the genus of hydroxyalkyl starch polysaccharides, the functional groups on the hydroxyalkyl starch polysaccharide, the functional group on the protein that are being used to conjugate the polysaccharide with the protein. The prior art has shown a large quantity of experimentation is often necessary to overcome the unpredictable nature of protein conjugation with polysaccharides, including hydroxyalkyl starch polysaccharides. The level of predictability in this art is very low, and there is no information upon which to base a prediction of what HAS-protein conjugate might be functional upon formation of the covalent bond between any hydroxyalkyl starch and any protein. The issue in this application is the breadth of the claims in light of the predictability of the art as determined by the number of working examples, the skill level of the artisan, and the guidance presented in the instant specification and the prior art of record. This make and test position is inconsistent with the decisions of *In re Fisher*, 427 F. 2d 833, 839, 166 USPQ 18, 24 (CCPA 1970) where it is stated that "... scope of claims must bear a reasonable correlation to scope of enablement provided by the specification to persons of ordinary skill in the art...". Without sufficient guidance, determination of having the desired biological characteristics is unpredictable and the experimentation left to those skill in the art is unnecessarily and improperly extensive and undue. See *In re Wands*, 858 F.2d at 737, 8 USPQ2d at 1404 (Fed. Cir. 1988). Therefore, absent direction/guidance regarding whether the protein identified can tolerate the modifications contemplated a non-functional HAS-protein conjugate may result and one of skill in the art would not be able to practice the claimed invention commensurate in scope with the claims.

Claim Rejections - 35 USC § 102

22. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

23. Claims 37, 43, 44, 46, 50-53, and 55 are rejected under 35 U.S.C. 102(b) as being anticipated by Leonard et al. (U.S. Patent 5,079,337).

Leonard et al. disclose a conjugate comprising: a hemoglobin which can undergo a reversible transition between an oxygenated state and a deoxygenated state; and a water-soluble hemocompatible polymer covalently bonded to the hemoglobin, ionically bonded to the hemoglobin and having a molecular weight of about 1,000 to 500,000 daltons, and wherein the polymer or ligand has a polar group which forms a covalent bond between the polymer and the hemoglobin, the polar group comprising a hydroxyl, carboxyl, amino or aldehyde moiety; the conjugate having a mean molecular weight of about 70,000 to 1,000,000 daltons. The conjugate, wherein the polymer has a molecular weight of about 1,000 to 100,000 daltons. The conjugate, wherein the polymer is a hydroxylalkyl starch in which the alkyl is of 2 to 4 carbon atoms. The conjugate, wherein the ligand is chemically bound to the polymer by an amine linkage (see claims 1, 3, 8, and 10).

Conclusion

24. No claims are allowed.

Art Unit: 1656

25. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anand U. Desai, Ph.D. whose telephone number is (571) 272-0947. The examiner can normally be reached on Monday - Friday 9:00 a.m. - 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Kathleen Kerr Bragdon can be reached on (517) 272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1656

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

September 13, 2007

AD
/Anand Desai/
Patent Examiner
Art Unit 1656

/Robert B. Mondesi/
Primary Examiner
Group 1652